

What is claimed is:

1. In a computer system having a memory system and a display that displays a graphical user interface for management of system resources, a method comprising the steps of:

5 displaying a set of resource tasks in a task display area and concurrently displaying a set of resource objects in a resource display area;
receiving a selection of at least two resource objects displayed within the resource display area upon which to apply a function associated with at least one resource task displayed in the task display area;

10 applying the function associated with at least one resource task to resource data associated with each selected resource object to produce resource information for each selected resource object; and

concurrently displaying the resource information for each selected resource object in at least one shared output display area such that a user of the computer system can 15 simultaneously view the resource information for each selected resource object.

2. The method of claim 1 wherein in the step of applying, the function applied to resource data associated with each selected resource object is obtained by a step of:

20 receiving a selection of at least one resource task, the at least one resource task having an associated function which the step of applying applies to at least one of each selected resource object to produce resource information as a result of the function.

3. The method of claim 2 wherein the step of applying the function comprises the steps of:

25 determining, for each of the at least one selected resource task, any use cases associated with that task that apply to any selected resource objects; and
for each use case that applies to a selected resource object, applying an associated function of that use case to resource data associated with the selected resource object to which that use case applies in order to produce the resource information for that selected 30 resource object.

0 9 8 7 6 5 4 3 2 1 0

4. The method of claim 3 wherein the resource objects represent entities with a storage area network and wherein the resource tasks represent systems management functions that can be carried out upon the entities with the storage area network.

5

5. The method of claim 2 wherein:

the step of receiving a selection of at least one resource task comprises receiving a selection of at least two different resource tasks, each having at least one respective associated function;

10

wherein the step of applying applies each respective associated function of each of the at least two selected resource tasks to data associated with at least one of each selected resource object to produce resource information for each respective associated function for the resource objects to which that function is applied; and

15

wherein the step of concurrently displaying the resource information for each selected resource object concurrently displays resource information for each respective associated function for the resource objects to which that function is applied in respective shared output display areas, such that a user of the computer system can concurrently compare resource information produced from applying multiple functions associated with multiple resource tasks on multiple resource objects.

20

6. The method of claim 1 wherein the step of displaying a set of resource tasks in a task display area includes the steps of:

25

displaying a plurality of task categories, each task category identifying a set of related resource tasks based upon a commonality between functions associated with each resource task in the set;

receiving a selection of at least one task category from the plurality of task categories; and

in response to receiving the selection of at least one task category, displaying the set of related resource tasks identified by the selection of at least one task category while

hiding from display other sets of resource tasks identified by task categories that are not selected.

7. The method of claim 6 wherein the displayed set of related resource tasks identified by the selection of at least one task category includes at least one resource view task which a user of the computer system may select such that the step of applying the function associated with at least one resource task applies a view function associated with the resource view task to produce resource information in a view format allowing the user to graphically view the resource information.

10

8. The method of claim 1 wherein:

the step of concurrently displaying a set of resource objects hierarchically displays the set of resource objects in a resource display area according to a resource object hierarchy that defines hierarchical relationships between certain of the resource objects, such that resource objects hierarchically related below other resource objects are hierarchically displayed below the other resource objects;

and wherein the step of receiving a selection of at least two resource objects comprises the steps of:

20 receiving a selection of a first resource object within the hierarchical display of resource objects; and

while maintaining the selection of the first resource object, receiving a selection of a second resource object within the hierarchical display of resource objects.

25 9. The method of claim 1 wherein the resource tasks are displayed on a left portion of the graphical user interface, the resource objects are displayed in a center portion of the graphical user interface, and the shared output display area displays the resource information in at least one view panel with the shared output display area on a right portion of the graphical user interface.

30

10. The method of claim 1 wherein at least one of the resource display area and the shared output display area include a view panel that includes at least one split panel function and wherein the method further comprises the steps of:

5 receiving a selection of a split panel function for a view panel on the graphical user interface; and

dividing the view panel into at least two view panels in response to receiving the selection of the split panel function.

11. The method of claim 10 wherein the split panel function is at least one of a 10 horizontal split panel function and a vertical split panel function.

12. The method of claim 10 wherein the view panel for which the selection of the split panel function is received is a resource object view panel in the resource display area that contains a display of resource objects for selection by a user, and wherein the step of 15 dividing creates two resource object view panels from which a user of the graphical user interface can select resource objects for application of functions associated with selected resource tasks.

13. The method of claim 10 wherein the view panel for which the selection of the split 20 panel function is received is a view panel in the shared output display area that contains a display of resource information, and wherein the step of dividing creates two view panels from which a user of the graphical user interface can select one view panel to be a target view panel for display of resource information produced as a result of application of functions associated with selected resource tasks on selected resource objects.

25

14. The method of claim 10 further comprising the steps of:

receiving a selection of a view panel to operate as a target panel in the shared output display area on the graphical user interface;

receiving a modification to a selection of one of:

DRAFT - 2023-06-01

the at least two resource objects displayed within the resource display area;

the at least one storage resource task displayed within the task display area;

5 applying the modification to the selection to produce resource information that is displayed within the target panel in the shared output display area.

10 15. The method of claim 1 wherein the step of concurrently displaying displays the resource information in a form including at least one of: text, a table, a graph, and a network topology map.

16. A method of presenting systems management information relating to resources in a network, the method comprising the steps of:

15 displaying a plurality of resource tasks in a task display area on a graphical user interface;

displaying a plurality of resource objects in a resource display area on the graphical user interface;

receiving a selection of at least one resource task identifying a function to apply to a selection of at least two resource objects;

20 25 applying the at least one function associated with each of the at least one resource task to the selection of at least two resource objects to produce a first set of resource information; and

displaying the first set of resource information for each resource object in at least one view panel in an shared output display area for viewing by a user of the graphical user interface.

17. The method of claim 16 further including the steps of:

receiving a selection of at least one view panel in the shared output display area to be a target panel;

receiving a modification to the selection of the at least one resource task identifying a function to apply to the selection of at least two resource objects; applying the modification to any selected resource objects to produce a second set of resource information; and

5 concurrently displaying the second set of resource information in the target panel for viewing by a user of the graphical user interface while concurrently displaying at least portion of the first set of resource information in a view panel that is not the target panel.

18. A computer system, comprising:

10 a display;
a memory system;
a processor; and
an interconnection mechanism connecting the display, the processor and the memory system;

15 wherein the memory system is encoded with a resource management application that when performed on the processor, produces a resource management process that includes a graphical user interface produced on the display of the computer system, the graphical user interface allowing the resource management process to perform the operations of:

20 displaying a set of resource tasks in a task display area and concurrently displaying a set of resource objects in a resource display area in the graphical user interface;

receiving a selection of at least two resource objects displayed within the resource display area upon which to apply a function associated with at least one resource task displayed in the task display area;

25 applying the function associated with at least one resource task to resource data associated with each selected resource object to produce resource information for each selected resource object; and

DRAFT - 01042

concurrently displaying the resource information for each selected resource object in at least one shared output display area such that a user of the computer system can simultaneously view the resource information for each selected resource object.

5 19. The computer system of claim 18 wherein when the resource management process performs the operation of applying, the function applied to resource data associated with each selected resource object is obtained by an operation of:

receiving a selection of at least one resource task, the at least one resource task having an associated function which the step of applying applies to at least one of each selected resource object to produce resource information as a result of the function.

10 20. The computer system of claim 19 wherein when the resource management process performs the operation of applying the function, the resource management process performs the operations of:

15 determining, for each of the at least one selected resource task, any use cases associated with that task that apply to any selected resource objects; and

20 for each use case that applies to a selected resource object, applying an associated function of that use case to resource data associated with the selected resource object to which that use case applies in order to produce the resource information for that selected resource object.

25 21. The computer system of claim 20 wherein the resource objects represent entities with a storage area network and wherein the resource tasks represent systems management functions that can be carried out upon the entities with the storage area network.

22. The computer system of claim 19 wherein:

when the resource management process performs the operation of receiving a selection of at least one resource task, the resource management process performs the operation of receiving a selection of at least two different resource tasks, each having at least one respective associated function;

wherein when the resource management process performs the operation of applying, the resource management process applies each respective associated function of each of the at least two selected resource tasks to data associated with at least one of each selected resource object to produce resource information for each respective associated

5 function for the resource objects to which that function is applied; and

wherein when the resource management process performs the operation of concurrently displaying the resource information for each selected resource object, the resource management process concurrently displays resource information for each respective associated function for the resource objects to which that function is applied in
10 respective shared output display areas, such that a user of the computer system can concurrently compare resource information produced from applying multiple functions associated with multiple resource tasks on multiple resource objects.

23. The computer system of claim 18 wherein when the resource management process
15 performs the operation of displaying a set of resource tasks in a task display area, the resource management process performs the operations of:

displaying a plurality of task categories, each task category identifying a set of related resource tasks based upon a commonality between functions associated with each resource task in the set;

20 receiving a selection of at least one task category from the plurality of task categories; and

in response to receiving the selection of at least one task category, displaying the set of related resource tasks identified by the selection of at least one task category while hiding from display other sets of resource tasks identified by task categories that are not
25 selected.

24. The computer system of claim 23 wherein the displayed set of related resource tasks identified by the selection of at least one task category includes at least one resource view task which a user of the computer system may select such that when the resource

30 management process performs the operation of applying the function associated with at

least one resource task, the resource management process applies a view function associated with the resource view task to produce resource information in a view format allowing the user to graphically view the resource information in the graphical user interface.

5

25. The computer system of claim 18 wherein:

when the resource management process performs the operation of concurrently displaying a set of resource objects, the resource management process hierarchically displays the set of resource objects in a resource display area according to a resource object hierarchy that defines hierarchical relationships between certain of the resource objects, such that resource objects hierarchically related below other resource objects are hierarchically displayed below the other resource objects;

10 and wherein when the resource management process performs the operation of receiving a selection of at least two resource objects, the resource management process performs the operations of:

15 receiving a selection of a first resource object within the hierarchical display of resource objects; and

20 while maintaining the selection of the first resource object, receiving a selection of a second resource object within the hierarchical display of resource objects.

26. The computer system of claim 18 wherein the resource management process displays resource tasks on a left portion of the graphical user interface, and displays the resource objects in a center portion of the graphical user interface, and displays in the shared output display area the resource information in at least one view panel with the shared output display area on a right portion of the graphical user interface.

27. The computer system of claim 18 wherein at least one of the resource display area and the shared output display area include a view panel that includes at least one split

panel function and wherein the resource management process further performs the operations of:

receiving a selection of a split panel function for a view panel on the graphical user interface; and

5 dividing the view panel into at least two view panels in response to receiving the selection of the split panel function.

28. The computer system of claim 28 wherein the split panel function is at least one of a horizontal split panel function and a vertical split panel function.

10

29. The computer system of claim 28 wherein the view panel for which the selection of the split panel function is received is a resource object view panel in the resource display area that contains a display of resource objects for selection by a user, and wherein when the resource management process performs the operation of dividing, the resource management process creates two resource object view panels from which a user of the graphical user interface can select resource objects for application of functions associated with selected resource tasks.

15 30. The computer system of claim 28 wherein:

20

the view panel for which the selection of the split panel function is received is a view panel in the shared output display area that contains a display of resource information; and

25

wherein when the resource management process performs the operation of dividing, the resource management process creates two view panels from which a user of the graphical user interface can select one view panel to be a target view panel for display of resource information produced as a result of application of functions associated with selected resource tasks on selected resource objects.

30

31. The computer system of claim 28 wherein the resource management process further performs the operations of:

DOCUMENT EVIDENCE

receiving a selection of a view panel to operate as a target panel in the shared output display area on the graphical user interface;

receiving a modification to a selection of one of:

5 the at least two resource objects displayed within the resource display area;

 the at least one storage resource task displayed within the task display area;

 applying the modification to the selection to produce resource information that is displayed within the target panel in the shared output display area.

10

32. The computer system of claim 18 wherein when the resource management process performs the operation of concurrently displaying, the resource management process displays the resource information in a form including at least one of: text, a table, a graph, and a network topology map.

15

33. A computer system for presenting systems management information relating to resources in a network, the computer system comprising:

 a display;

 a memory system;

20

 a processor; and

 an interconnection mechanism connecting the display, the processor and the memory system;

25

 wherein the memory system is encoded with a resource management application that when performed on the processor, produces a resource management process that includes a graphical user interface produced on the display of the computer system, the graphical user interface allowing the resource management process to perform the operations of:

 displaying a plurality of resource tasks in a task display area on the graphical user interface on the display;

TOP SECRET//
REF ID: A65162

displaying a plurality of resource objects in a resource display area on the graphical user interface on the display;

receiving a selection of at least one resource task identifying a function to apply to a selection of at least two resource objects;

5 in the memory system, applying the at least one function associated with each of the at least one resource task to the selection of at least two resource objects in the memory system to produce a first set of resource information in the memory system; and

displaying the first set of resource information for each resource object in at least one view panel in an shared output display area for viewing by a user of the graphical 10 user interface.

34. The computer system of claim 34 wherein the resource management process further performs the operations of:

receiving a selection of at least one view panel in the shared output display area to 15 be a target panel;

receiving a modification to the selection of the at least one resource task identifying a function to apply to the selection of at least two resource objects;

applying the modification to any selected resource objects to produce a second set of resource information; and

20 concurrently displaying the second set of resource information in the target panel for viewing by a user of the graphical user interface while concurrently displaying at least portion of the first set of resource information in a view panel that is not the target panel.

35. A computer program product having a computer-readable medium including 25 computer program logic encoded thereon that, when executed on a computer system having a coupling of a memory system, a processor, and a display that displays a graphical user interface, and wherein when the computer program logic is executed on the processor, the computer program logic provides a method for management of network resources by causing the processor to perform the operations of:

displaying a set of resource tasks in a task display area and concurrently displaying a set of resource objects in a resource display area;

receiving a selection of at least two resource objects displayed within the resource display area upon which to apply a function associated with at least one resource task

5 displayed in the task display area;

applying the function associated with at least one resource task to resource data associated with each selected resource object to produce resource information for each selected resource object; and

concurrently displaying the resource information for each selected resource object
10 in at least one shared output display area such that a user of the computer system can simultaneously view the resource information for each selected resource object.

36. A computer program product having a computer-readable medium including computer program logic encoded thereon that, when executed on a computer system

15 having a coupling of a memory system, a processor, and a display that displays a graphical user interface, and wherein when the computer program logic is executed on the processor, the computer program logic provides a method for management of network resources by causing the processor to perform the operations of:

displaying a plurality of resource tasks in a task display area on a graphical user
20 interface;

displaying a plurality of resource objects in a resource display area on the graphical user interface;

receiving a selection of at least one resource task identifying a function to apply to a selection of at least two resource objects;

25 applying the at least one function associated with each of the at least one resource task to the selection of at least two resource objects to produce a first set of resource information; and

displaying the first set of resource information for each resource object in at least one view panel in an shared output display area for viewing by a user of the graphical
30 user interface.

37. The computer program product of claim 37 wherein the computer program logic further includes instructions that, when performed on the processor, cause the processor to perform the operations of:

5 receiving a selection of at least one view panel in the shared output display area to be a target panel;

receiving a modification to the selection of the at least one resource task identifying a function to apply to the selection of at least two resource objects;

10 applying the modification to any selected resource objects to produce a second set of resource information; and

concurrently displaying the second set of resource information in the target panel for viewing by a user of the graphical user interface while concurrently displaying at least portion of the first set of resource information in a view panel that is not the target panel.

15 38. A computer system, comprising:

a display;

a memory system;

a processor; and

20 an interconnection mechanism connecting the display, the processor and the memory system;

wherein the memory system is encoded with a resource management application that when performed on the processor, produces a resource management process that includes a graphical user interface produced on the display of the computer system and provides a means for management of network resource by providing the computer system with:

means for displaying a set of resource tasks in a task display area and concurrently displaying a set of resource objects in a resource display area in the graphical user interface;

means for receiving a selection of at least two resource objects displayed within the resource display area upon which to apply a function associated with at least one resource task displayed in the task display area;

5 means for applying the function associated with at least one resource task to resource data associated with each selected resource object to produce resource information for each selected resource object; and

10 means for concurrently displaying the resource information for each selected resource object in at least one shared output display area such that a user of the computer system can simultaneously view the resource information for each selected resource object.

39. A computer system, comprising:

a display;

a memory system;

15 a processor; and

an interconnection mechanism connecting the display, the processor and the memory system;

20 wherein the memory system is encoded with a resource management application that when performed on the processor, produces a resource management process that includes a graphical user interface produced on the display of the computer system and provides a means for management of network resource by providing the computer system with:

displaying a plurality of resource tasks in a task display area on a graphical user interface;

25 displaying a plurality of resource objects in a resource display area on the graphical user interface;

receiving a selection of at least one resource task identifying a function to apply to a selection of at least two resource objects;

applying the at least one function associated with each of the at least one resource task to the selection of at least two resource objects to produce a first set of resource information; and

displaying the first set of resource information for each resource object in at least 5 one view panel in an shared output display area for viewing by a user of the graphical user interface.